
Next-generation genomics: an integrative approach.

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Public Summary:

Integrating results from diverse experiments is an essential process in our effort to understand the logic of complex systems, such as development, homeostasis and responses to the environment. With the advent of high-throughput methods, acquisition of genome-scale data has never been easier. Each of the method provides an insightful, and yet one-dimensional, view of genome function; integrative analysis promises a unified, global view. However, the large amount of information and diverse technology platforms pose multiple challenges for data access and processing. This Review discusses emerging issues and strategies related to data integration in the era of next-generation genomics.

Scientific Abstract:

Integrating results from diverse experiments is an essential process in our effort to understand the logic of complex systems, such as development, homeostasis and responses to the environment. With the advent of high-throughput methods - including genome-wide association (GWA) studies, chromatin immunoprecipitation followed by sequencing (ChIP-seq) and RNA sequencing (RNA-seq) - acquisition of genome-scale data has never been easier. Epigenomics, transcriptomics, proteomics and genomics each provide an insightful, and yet one-dimensional, view of genome function; integrative analysis promises a unified, global view. However, the large amount of information and diverse technology platforms pose multiple challenges for data access and processing. This Review discusses emerging issues and strategies related to data integration in the era of next-generation genomics.

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